first and second sounds respectively are coincident with the simultaneous action of those valves which move together at the same time. When, therefore, in any given case, the action of the valves on one side of the heart is impeded—when, for example, a mass of separated fibrin interferes with the valvular movements—then the sounds produced by the valves on the impeded side will be reduced or even lost altogether. It is possible to detect this. In a case I saw with Mr. Spencer Wells, where fibrin was being laid down on the right side of the heart, this line of diagnosis was so easy that he expressed to me it had only to be practised once to be recognized ever afterwards. Suppose, then, that the separation is on the right side of the heart, there will be feeble or deficient first and second sounds over the line of the right side of the organ—that is to say, in the line of the heart by the sternum. Turning, however, to the left side, both sounds of the heart will be heard.

"Supposing the separation of fibrin to be on the left side, these physical signs will be simply reversed—that is to say, the sounds of the organ will be faint or inaudible on the left, audible and distinct on the right side.

"One other distinctive point is worthy of attention. When the heart is blocked up with fibrin on the right side, its impulse is reduced, and its action is feeble throughout. When, on the other hand, the organ is blocked up on the left side, the action as a rule is for a long time irregular, tumultuous, struggling.

"In some rare cases there is separation of fibrin on both sides of the heart, in which the prominent symptoms are those of obstruction in the right cavities.

"In concluding this history of symptoms, it is necessary briefly to refer to the condition of the other organs of the body when there is separation of fibrin in the heart. I may state on this point as a general truth, that when there is an obstruction on the right side of the heart from fibrin, there is necessarily congestion of all the organs of the body except the lungs, and that when the separation is on the left side of the heart the congestion extends to the lungs also.

"In three cases where the separation of the fibrin was on the right side, and the symptoms were prolonged over many days, I have seen congestion of the veins in the lower half of the body succeeded by exudation of watery fluid, so that the limbs became œdematous.

"The diagnosis of separation of fibrin in arteries and veins is in some cases as remarkably clear as it is in other cases profoundly obscure. When from the left side of the heart a portion of fibrin floats away into the arterial system, plugs up a main trunk and acts like a ligature on an artery, the diagnosis is easy enough; or when in a superficial vein small portions of mass can be detected directly, as in one of the cases I have related, then again the diagnosis is sufficiently simple; but when a tube or solid cylinder of fibrin is laid down in an artery or vein and produces obstruction at the point where it is so laid down, then, although the fact of obstruction may be clear enough, and the position of the obstruction clear enough, the nature of the obstructing substance, and whether it be or be not fibrin, must in many cases be out of our calculation. Nothing assists us here except the previous history. Should it be discovered that the patient has recently suffered from acute disease marked by tendency to separation of fibrin, or that he has been exposed to exhaustion, or shown indications of local stasis of blood, then we may draw an inference as to the possibility of separation of fibrin. There, I fear, we must rest content, hoping that, having discovered so much, we may in course of time discover more."—*Med. Times and Gaz.*, Nov. 21, 1868.

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30. *Pathology and Treatment of Cholera.*—GEO. BARNARD, Esq., Surgeon 6th B. L. I., has favoured us with a copy of a letter addressed by him to the Inspector-General of Hospitals, Bengal Army, in which he maintains that cholera is a specific acute inflammation of the mucous tissue of the stomach and small intestines, and that antimony, or its ally, ipecacuanha, are both remedies, *par excellence.* We lay his remarks before our readers, but at the same time must say, that tartarized antimony seems to us to be a most inappropriate remedy for cholera. We cannot, indeed, conceive a single indication it can fulfil, or on

what principle it can be recommended except that of "*similia similibus, etc.*," for it is a severe irritant to the mucous membrane, and artificial cholera may be produced by its administration, as Mr. B. himself admits.

He writes, under date of July 31st, 1868: "In the commencement of the present year I obtained leave of absence for three months to visit Calcutta, for the special purpose of searching all the old records of cholera to be found, to discover, if possible, amongst them some hint or clue to a rational, and, at the same time, simple and easy treatment of this fatal malady. And, firstly, as a result of this search; secondly, from Dr. Lionel Beale's researches into the morbid anatomy; and, thirdly, from an expressed opinion, which coincided with my own, of Dr. Ewart's, of Calcutta, as to the nature of the disease, I have the honour to give, for the information of the Inspector-General of Hospitals, Bengal Army, the following reasons to show that antimony is the remedy for cholera, as it is for many other acute inflammations. First, then, as to the nature of the disease—cholera. It is supposed to be derived from, or to be the effect of, an animal or vegetable poison in the body; but this is theory not fully proven. Dynamic sources have been talked of, but we really know nothing more than this—that dirt, dirty air, dirty water, dirty food, dirty person, dirty clothes, and overcrowding, afford the greatest facilities for the *spread* of the disease when it once arises; more than this we do not really know at present, I believe. We assume that it is communicable from man to man, or from community to community, from one seaport to another, from one country to another, by means of human intercourse, as it almost always follows the high roads of human intercourse; and we are right to assume as much as this, and act on the assumption, for the safety of communities, until it is proved incommunicable through such means, always and everywhere, under every possible condition. All we actually know of its natural history is the developed form in man, its symptoms, and its effects—positively nothing more. It produces, or in its essence it is, an inflammation—specific or non-specific, no matter—of the mucous membrane of the stomach and small intestines. This inflammation of this tissue attracts an enormous flow of blood to the part affected, an hyperæmia, for it is intensely acute; the most rapid tissue changes it is possible to imagine take place in the most rapid manner, requiring an enormous supply of blood, and the products are thrown out of the body by vomiting and purging as rapidly as they are formed. This inflammation causes a burning pain in the stomach, from the ensiform cartilage to the umbilicus; and, as the tissue inflamed attracts so much blood, and robs it of so much of its watery portion, the extremities get cold and shrivelled and cramped; the eyes sink in their sockets; even the tongue and breath are cold; all vital phenomena are changed; all other secretions cease; everything gives way to the intensity of this inflamed action of the mucous membrane of the stomach and small intestines, for all the blood in the body is required to carry it on. Cholera has been mistaken for irritant poisoning, and irritant poisoning for cholera, and for nothing else only for irritant poisoning, which inflames the same tissue, and the symptoms of some irritant poison, whose effect is to inflame the mucous membrane of the stomach and bowels, so closely resemble the symptoms of cholera, that the greatest skill and care are sometimes required to distinguish between criminal poisoning and cholera. Dr. Lionel Beale's researches into the morbid anatomy of this disease clearly prove the intensity of the inflammation of the mucous tissue. Many and different conditions of this tissue have been described by observers, depending on the stage at which death occurred, but unmistakable signs of inflammation are over and over again recorded. Dr. Ewart, Physician to the Calcutta Medical College Hospital, is of opinion that the disease is essentially, or results in, an inflammation of this tissue, and I and others share this opinion with him.

"Granting that cholera is an inflammation, so far as we are practically concerned, of the mucous membrane lining these viscera, and that there is a great need of a remedy which shall act speedily and efficaciously upon the inflamed tissue, what one so likely to suit our purpose as antimony? What is the remedy always relied upon, and most justly so, for other acute inflammations, especially of mucous membranes, in which calomel is not considered so fit or rapid enough in its action? Antimony.

"It maintains a relaxed state of the arterial system, and inflamed parts can thus be continuously kept with all the advantages of lessened vascular tension. It is the most rapid remedy we have in its action; it does not produce vomiting after the first dose or two; it will allay vomiting in cholera after the first two or three doses, for in that time its effect upon the inflamed mucous membrane of the stomach will be to check the inflamed action and its flow of products (like rice-water). Its best and most marked action, perhaps, is on the skin, drawing the circulation of the blood to the surface—a most desirable result, and specially desired to restore the balance of the circulation in cholera. It is a powerful diuretic also—another desideratum for its use in cholera. There is no fear of its increasing the vomiting and purging in the true cholera stage, for they are results of inflammation, and its effects upon the inflamed tissues will be to stop that excessive action, and outpour of inflammatory products—'rice-water evacuations.' The excretion of these fluids being arrested by the action of the antimony, there is nothing left to be purged out or vomited.

"Calomel is a valuable remedy no doubt, but antimony is of much greater value, because it is so quick in its action; in some cases life is extinct in less than six hours; calomel can have no effect in these; antimony produces an effect within half an hour, as a rule. In my search through the old cholera records in Calcutta, I found six cases of cholera treated by one grain doses of tartarized antimony every quarter of an hour; in five of these cases the vomiting ceased after the third dose, and the patient recovered; one died, and died, in the opinion of the medical officer, because the antimony was not continued long enough, or there was a relapse, and the antimony was not repeated. These cases occurred in the midst of a severe epidemic in Bengal, in 1824 or 1825, when nearly all the cases treated with calomel were lost.

"I met with one case of cholera last month. I found a Syce lying on the floor of his master's stable at 4 P. M., vomiting and purging incessantly a thin, watery, colourless fluid, cold extremities, cramps, minute pulse, &c. He had one grain of tartarized antimony given him every quarter of an hour three times; he vomited after the first and after the second dose, but not after the third. Thus, in half an hour the vomiting was completely checked. About three hours after this he was taken to hospital in a very great state of prostration, but *perspiring* freely, and no purging. He had ammonia and brandy and water given him at intervals, and he gradually recovered. He passed urine at 5 P. M. on the next day, for the first time for six and thirty hours. He had no other medicine, and was discharged well on the third day. Antimony should not be given in the preliminary stage of diarrhœa, if there is such a stage; I do not propose it as a remedy for diarrhœa. We have one—a sufficient and thoroughly good and reliant one—opium.

"30 grains of 'antimony's ally,' ipecacuanha, will have the same effect given in the same way every quarter of an hour. See Docker's case of forty grains ipecac in advanced collapse (*Lancet*), and 392 cases, by Dr. Carl Müller, Vienna.

"When cholera is epidemic, opium should be given for diarrhœa, as inculcated by Dr. John Macpherson, freely, in large and sufficient doses, either in combination with aromatic chalk, chloroform, sulphuric acid, ether, or brandy; one or the other, or even alone; but it should always be given freely; for, as Dr. Macpherson says, it is better to suffer for a day or so from the effects of opium, than to suffer an attack of cholera. It is in the true cholera stage, when there is violent and incessant vomiting and purging of the peculiar rice-water evacuations, that antimony is now proposed as the best remedy: it is to be given in full-grain doses every quarter of an hour until the vomiting ceases; not less than three doses should, I think, always be given; and if the vomiting does not cease after the third and fourth, a fifth and a sixth, or more even, may be given; for so long as vomiting continues, greater part is rejected. In those very severe and fatal cases called 'cholera sicca,' there being no purging or vomiting, I would also give antimony. After the vomiting and purging has ceased, ammonia and ether or brandy should be given in accordance with the amount of prostration or collapse.

"The action of the antimony will soon tell on the skin and kidneys. Other usual external applications will be useful in most cases, but I would give nothing else but spoonfuls of ice-cold water, or ice to suck, by mouth, until the vomiting had ceased, and stimulants were required to relieve in the after-stage of prostration or collapse. It may appear strange that so powerful a remedy as antimony was but once thought of or tried, and that by a young unknown man in some out-of-the-way station in Bengal, forty-four years ago; but the disease, in its course, has given a strong and generally universal idea that it is a powerful and violent effort of nature to rid the system of an imbibed 'poison,' and as antimony purges and vomits, as well as being diuretic and diaphoretic, it would naturally be looked upon as only adding to the mischief. Did it never strike any one that if opium and astringents are the universally acknowledged remedies used in the preliminary diarrhœa by which the flux is checked, and the outlet for the poison by the bowels cut off, that it cannot be poison? Or, if it is, that the system digests or rids itself of it with the very first diarrhœal discharges? If not, why such an urgent appeal for opium to check the discharges?

"If there is poison, where is it? It has never been defined. Is it in the rice-water evacuations? A gentleman in Calcutta has been searching for it in the excretions from the body, but his results, he assured me, were wholly negative, as far as he had tried the effect on living animals; all the excretions were inert, and yet they had been made to swallow large quantities. It may be poison, but we cannot discover the poison, and we always try to shut it up in the system from the very first with opium, or, may be, the opium protects the system from the effects of the poison, and it is with *effects* that we have to deal in true cholera, and those are acute inflammation of the mucous membrane of the stomach and small intestines, and the consequences, and the quickest and most powerful remedy for acute inflammations is antimony.

"Opium does protect the system from threatened inflammations, I believe: and this may be one reason why opium is so signally successful in the preliminary diarrhœa."

"P. S. I meant to have spoken of the earnest way in which Annesley calls attention to the constant connection in epidemic cholera between the seat of the burning pain and the 'vermilion blush,' and the necessity and great use of active measures, early bleeding, &c. This is acute inflammation, and the treatment at that time. Moreover, Annesley remarks that this appearance after death is not found in any other disease.

"Suppose the entire mucous coat inflamed from the cardiac orifice of the stomach to the ileo-cæcal valve, we have, at the lowest computation, nine superficial feet of tissue involved, quite enough to account for the symptoms. What would be the effect of acute inflammation of fully one-half of the skin?

"*Heat, swelling, redness, and pain* exist in cholera in the tissue involved, these constitute inflammation, the inflammation is specific acute, and runs a certain course, terminating, it may be, in resolution and health, or causing irreparable mischief or killing in its unchecked course.

"Compare the effects of specific inflammation of a few square inches of mucous membrane in coryza."

31. *The Cholera in the Theatre of War of Bavaria during the Summer of* 1866.—According to R. Voltz the cholera was propagated from place to place, in the several localities where it appeared, by the arrival of troops, some of whom were labouring under diarrhœa, or were convalescents from bowel complaints, or were still affected with them as sequelæ of cholera. The propagation of the disease from the first isolated cases until it had spread generally throughout the community, is by Dr. V. traced with great precision. In ten localities cholera prevailed epidemically, in twenty-five other localities it occurred, as it were, in a sporadic form. In the several localities where it became epidemic it differed in respect to its limits, its severity, and its continuance. In neighbouring places of like conditions there would occur an interval of from three to four weeks between its appearance in one and the other, a circumstance inexplicable on the supposition that the production of cholera was due alone to a special morbific condition of atmosphere. Single cases were traceable to an infection